

Appl. No. 10/071,862
Amdt. Dated 08/03/2005
Reply to Office Action of 04/06/2005

REMARKS

This paper is in response to the Office Action mailed on 04/06/2005. In the Office Action, (i) claims 1-5, and 27-70 were withdrawn, and (ii) claims 6-26 were rejected under 35 USC 102(e).

Reexamination and reconsideration of the claim rejections is respectfully requested in view of the amendments and the remarks made herein.

Applicant has amended claims 6, 9-12, 14-16, and 19-26 by this response. Claims 71-90 have been added. Claims 1-5 and 27-70 have been cancelled without prejudice. Accordingly, claims 6-26 and 71-90 are now pending. Of the pending claims, claims 6, 16, and 83 are independent claims.

Applicant believes that no new matter has been added by this response.

I) RESTRICTION REQUIREMENT

The Office Action maintained the restriction requirement of the prior office action in response to which the Applicant elected to go forward with Group II claims 6-26. Claims 1-5 and 27-70 have thus been withdrawn from consideration.

Applicant has cancelled the withdrawn claims 1-5 and 27-70 without prejudice as they are directed to a non-elected invention.

Applicant reserves the right to file continuation and divisional patent applications to pursue inventions claimed in the subject matter of claims 1-5 and 27-70 or other disclosed subject matter.

II) SPECIFICATION AMENDMENTS

Applicant has added two new paragraphs and amended three paragraphs in the specification.

The paragraph added before paragraph no. [0035] is supported by the paragraph in the ABSTRACT beginning at page 28, line 4 of Applicant's specification as originally filed.

The paragraph added before paragraph no. [0051] is supported by paragraph no. [0030] beginning at page 8, line 7; the brief description of Figure 6; and the text found illustrated in Figure 6, as originally filed.

Paragraph no. [0037] was amended to introduce FIG. 2 and is supported by the brief description of Figure 2.

Paragraph no. [0051] was amended to correct grammatical errors and insert a figure label and reference number where appropriate.

Paragraph no. [0057] was amended to be consistent with paragraph no. [0055] that discusses different routing pitches.

III) CLAIM AMENDMENTS

Applicant has amended claims 6, 9-12, 14-16, and 19-26.

Independent claims 6 and 16 have been amended to clarify the invention in that the plurality of objects have at least two metal routing layers and that the at least two metal routing layers are used to interconnect objects. Dependent claims 14-15 and 25-26 have been amended accordingly to clarify how the at least two metal routing layers may be used at each level of the IC design.

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Independent claims 6 and 16 have further been amended to clarify that forming the second level for the IC design includes partitioning the first level into a second plurality of partitions.

Independent claims 6 and 16 have further been amended to remove instances of "one or more" after "plurality of" due to inconsistent claim language. Dependent claims 9-10 and 19-20 have also been amended accordingly.

Dependent claims 11-12 and 21-24 have been amended to correct grammar and readability of the claims.

IV) CLAIM REJECTIONS UNDER 35 USC 102(e)

On page 2 of the Office Action, claims 6-8, 10-11, 13-14, 16-18, 20-22, and 25 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 4,612,618 issued to Pryor, et al. (Pryor). Applicant respectfully traverses this rejection.

On page 4 of the Office Action, claims 6-11, 13-14, 16-22, and 25 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,640,327 issued to Benjamin S. Ting (Ting). Applicant respectfully traverses this rejection.

On page 6 of the Office Action, claims 6-26 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,269,469 issued to Pavisic, et al. (Pavisic). Applicant respectfully traverses this rejection.

Regarding independent claim 6, the Office Action alleges that Pryor discloses "a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 5, lines 45-48; column 8, lines 21-24]; accessing a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 5, lines 49-56; column 8, lines 29-32]; and forming a second level for the IC design, including: partitioning the second level into a plurality of partitions, wherein one or more partitions of the first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 6, lines 21-29; column 8, lines 33-36]; and within each partition of the second plurality of partitions, interconnecting objects substantially independently of other partitions of the second plurality of partitions [column 6, lines 36-40; column 8, lines 36-38]."
[Office Action, page 3, lines 1-22]. Applicant respectfully disagrees.

Regarding independent claim 16, the Office Action alleges that Pryor discloses "a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 5, lines 45-48; column 8, lines 21-24]; accessing a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 5, lines 49-56; column 8, lines 29-32]; and forming a second level for the IC design, including:

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partitioning the second level into a plurality of partitions, wherein one or more partitions of the first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 6, lines 21-29; column 8, lines 33-36]; allotting the second plurality of partitions among a plurality of areas, such that each area of the plurality of areas includes one or more partitions of the second plurality of partitions [column 4, line 34; column 6, lines 21-29; column 8, lines 33-36]; and within each area of the plurality of areas, interconnecting objects substantially independently of other areas of the plurality of areas [column 6, lines 36-40; column 8, lines 36-38]." [Office Action, page 3, line 23 through page 4, line 6]. Applicant respectfully disagrees.

The Office Action seems to be confusing Applicant's claim limitations of layers and levels. The Office Action cites to Pryor's column 5, lines 45-48; column 8, lines 21-24 to allegedly disclose the limitation of accessing an IC design including a plurality of objects on one or more layers. However, Applicant can find no reference at Pryor's column 5, lines 45-48 and Pryor's column 8, lines 21-24 to a layer or layers of an object.

Applicant has also diligently searched elsewhere in Pryor for the limitation of "layer" and can find no reference therein. More particularly, Applicant can find no reference in Pryor to "at least two metal routing layers" as is now recited in amended claims 6 and 16.

Thus, Applicant respectfully submits that Pryor does not anticipate independent claims 6 and 16.

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Regarding independent claim 6, the Office Action alleges that Ting discloses "a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 4, lines 26-28]; accessing a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 1, lines 59-61; column 4, lines 35-46]; and forming a second level for the IC design, including: partitioning the second level into a plurality of partitions, wherein one or more partitions of the first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 1, lines 61-63; column 4, lines 35-46]; and within each partition of the second plurality of partitions, interconnecting objects substantially independently of other partitions of the second plurality of partitions [column 2, lines 8-10; column 4, lines 46-49]." [Office Action, page 4, line 20 through page 5, line 1]. Applicant respectfully disagrees.

Regarding independent claim 16, the Office Action alleges that Ting discloses "a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 4, lines 26-28]; accessing a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 1, lines 59-61; column 4, lines 35-46]; and forming a second level for the IC design, including: partitioning the second level into a plurality of partitions, wherein one or more partitions of the

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first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 1, lines 61-63; column 4, lines 35-46]; allotting the second plurality of partitions among a plurality of areas, such that each area of the plurality of areas includes one or more partitions of the second plurality of partitions [column 1, lines 64-65; column 4, lines 37-46; column 5, lines 47-50]; and within each area of the plurality of areas, interconnecting objects substantially independently of other areas of the plurality of areas [column 2, lines 8-10; column 4, lines 46-49]." [Office Action, page 5, lines 13-26]. Applicant respectfully disagrees.

The Office Action cites to Ting's column 4, lines 26-28 to allegedly disclose the limitation of accessing an IC design including a plurality of objects on one or more layers. However, Applicant can find no reference at Ting's column 4, lines 26-28 to a layer or layers of an object.

Moreover, Applicant has diligently searched Ting for the limitation of "metal layer" or "metal routing layer", as is now recited in amended claims 6 and 16, and can find no reference therein. Applicant respectfully submits that Ting does not disclose using "at least two metal routing layers" to form interconnections.

Thus, Applicant respectfully submits that Ting does not anticipate independent claims 6 and 16.

Regarding independent claim 6, the Office Action alleges that Pavisic discloses "a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 6, lines 32-35]; accessing

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a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 2, lines 46-63; column 6, lines 40-481; and forming a second level for the IC design, including: partitioning the second level into a plurality of partitions, wherein one or more partitions of the first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 2, lines 46-63; column 6, lines 40-481; and within each partition of the second plurality of partitions, interconnecting objects substantially independently of other partitions of the second plurality of partitions [column 3, lines 19-22; column 6, lines 49-65].” [Office Action, page 6, lines 11-22]. Applicant respectfully disagrees.

Regarding independent claim 16, the Office Action alleges that Pavisc discloses “a method of routing an IC design comprising: accessing the IC design including a plurality of objects on one or more layers [column 6, lines 32-35]; accessing a first level for the IC design, wherein the first level of the IC design is partitioned into a first plurality of one or more partitions, and the plurality of objects of the IC design are among the first plurality of one or more partitions [column 2, lines 46-63; column 6, lines 40-481; and forming a second level for the IC design, including: partitioning the second level into a plurality of partitions, wherein one or more partitions of the first plurality of partitions is represented by at least two partitions of the second plurality of partitions [column 2, lines 46-63; column 6, lines 40-481; allotting the second plurality of partitions among a plurality of areas, such that

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each area of the plurality of areas includes one or more partitions of the second plurality of partitions [column 2, line 64-column 3, lines 18; column 6, lines 40-481; and within each area of the plurality of areas, interconnecting objects substantially independently of other areas of the plurality of areas [column 3, lines 19-22; column 6, lines 49-65].” [Office Action, page 7, lines 11-24]. Applicant respectfully disagrees.

The Office Action cites to Pavisic’s column 6, lines 32-35 to allegedly disclose the limitation of accessing an IC design including a plurality of objects on one or more layers. However, Applicant can find no reference at Pavisic’s column 6, lines 32-35 to a layer or layers of an object.

Moreover, Applicant has diligently searched Pavisic for the limitation of “metal layer” or “metal routing layer”, as is now recited in amended claims 6 and 16, and can find no reference therein. Applicant respectfully submits that Pavisic does not disclose using “at least two metal routing layers” to form interconnections.

Thus, Applicant respectfully submits that Pavisic does not anticipate independent claims 6 and 16.

As the independent claims are not anticipated, Applicant respectfully submits that the dependent claims having added limitations are also not anticipated.

In conclusion, Applicant respectfully requests the withdrawal of the 35 U.S.C. § 102(e) rejection of claims 6-8, 10-11, 13-14, 16-18, 20-22, and 25 over Pryor. Applicant respectfully requests the withdrawal of the 35 U.S.C. § 102(e) rejection of claims 6-11, 13-14, 16-22, and 25 over Ting.

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Applicant respectfully requests the withdrawal of the 35 U.S.C. § 102(e) rejection of claims 6-26 over Pavisic.

V) NEW CLAIMS

Applicant has added new claims 71-90.

Claims 71-82 are new dependent claims.

Claims 71-77 depend directly or indirectly from independent claim 6. Claims 78-82 depend directly or indirectly from independent claim 16.

As independent claims 6 and 16 are not anticipated by the cited references, neither are new dependent claims 71-82.

Claim 83 is a new independent claim of a first impression with new dependent claims 84-90 depending there-from.

Independent claim 83 includes the limitation of the first level of the IC design is partitioned into a first plurality of partitions and the partitioning of the first level of the IC design into a second plurality of partitions.

Accordingly, claims 83-90 are to be classified with the invention of Group II (claims 6-26) drawn to partitioning, classified in class 716, subclass 7 as discussed in the prior office action.

Independent claim 83 recites the limitation of "at least two metal wire routing layers". Thus, for similar reasons discussed above, Applicant respectfully submits that new claims 83-90 are not anticipated by Pryor, Ting, or Pavisic.

For the foregoing reasons, new claims 71-90 are also in condition for allowance.

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CONCLUSION

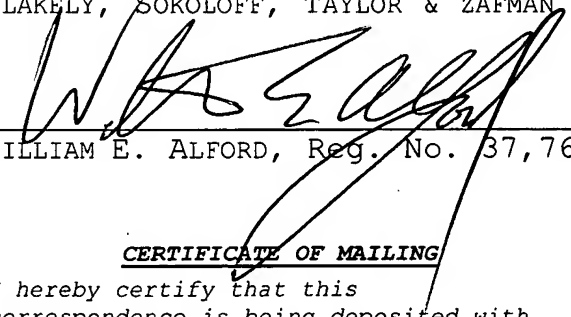
In view of the foregoing it is respectfully submitted that the claims are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance of the claims at an early date is solicited.

The Examiner is invited to contact Applicant's undersigned counsel by telephone at (714) 557-3800 to expedite the prosecution of this case should there be any unresolved matters remaining.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. If any other petition is necessary for consideration of this paper, it is hereby so petitioned. Please charge any shortage in fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 02-2666 and please credit any excess fees to such deposit account.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

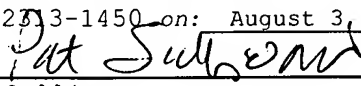
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on: August 3, 2005.


Pat Sullivan

8/3/05
Date